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BULLETIN
OF THE
TORREY BOTANICAL CLUB

APRIL, 1905

New or noteworthy Hepaticae from Florida

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(WITH PLATE 5)

The following notes are based almost entirely on three collections of *Hepaticae* from southern Florida, recently made under the direction of the New York Botanical Garden. The majority of the specimens were gathered in the region south of Miami. Dr. Small has already called attention to the physiographic peculiarities of this district and has commented upon the intimate relationship which exists between the higher plants found there and those native to the West Indies.* The *Hepaticae* bring out the same relationship; more than half the species in the collection have also been found in the West Indies or in other parts of tropical America, and the others find their closest allies among species from these regions.

The collections embrace only twenty-one species in a condition to be identified; three of these, however, are apparently undescribed, and six of the others are here definitely recorded for the first time from the United States. Nine species, therefore, are new to our hepatic flora. The remaining species, all of which have previously been collected in Florida, include one *Riccardia* (*R. pinguis*), one *Plagiochila* (*P. ludoviciana*), one *Radula* (*R. australis*), seven *Lejeuneae* (*Microlejeunea lucens*, *Lejeunea americana*, *Cheilo-lejeunea phyllobola*, *Euosmolejeunea duriuscula*, *E. opaca*, *Brachio-lejeunea corticalis*, and *Mastigolejeunea auriculata*) and two species of *Frullania* (*F. Kunzei* and *F. caroliniana*). The additions to

* Jour. N. Y. Bot. Gard. 5: 49-53. 1904.

[The BULLETIN for March (32: 123-177) was issued 19 Ap 1905.]

our flora include two representatives of the *Epigoniantheae* and seven *Lejeuneae*; they are as follows:

1. ***Plagiochila Smallii*** sp. nov.

Bright- or dark-green, loosely tufted: stems rigid, varying in color from green to yellowish or reddish, 0.35 mm. in diameter, composed of about three layers of thick-walled cells around a central cylinder of thin-walled, colorless cells, all the cells except those of the outermost layer more or less elongated; stems sparingly and irregularly or subdichotomously branched, the branches oblique, similar to the stem but often with smaller leaves: stem-leaves distant, spreading at an angle of 45–60°, narrowly ovate to ligulate, maximum length about 3 mm., width about 1 mm., shortly decurrent both antically and postically; antical margin straight or nearly so, plane or narrowly revolute, especially near the base, entire or with one or two small teeth in outer part; postical margin straight and parallel with the antical margin or slightly curved, revolute near the base, bearing two to six teeth in outer third, otherwise entire; apex broad and usually truncate, bearing two to four teeth; all of the teeth acuminate, the largest (in the apical region) six to ten cells long, three to seven cells wide at the base, and ending in a row of two or three cells: branch-leaves similar to the stem-leaves but usually with fewer and smaller teeth: leaf-cells plane, averaging $29 \times 16 \mu$ at the margin of the leaf, $37 \times 23 \mu$ in the middle, and $46 \times 25 \mu$ at the base; cell-walls thin but with distinct triangular trigones and occasional intermediate thickenings; cuticle slightly thickened, smooth: underleaves rudimentary: inflorescence dioicous: ♀ inflorescence borne on a more or less elongated branch, usually without an innovation; bracts in one pair, similar to the stem-leaves but usually a little broader in the basal region and with a few more teeth along the postical margin, 2.5 mm. long, 1.2 mm. wide; perianth (of unfertilized inflorescences) somewhat compressed, campanulate, 1.2 mm. long, 1 mm. wide, shortly bilabiate at the mouth, each lip bearing about twenty slender teeth, the majority of them being six to twelve cells long and two cells wide at the base; wing along the antical keel entire and very narrow, found in the basal region only: ♂ inflorescence and mature sporophyte not seen. (PLATE 5, FIGURES 1–8.)

In hammocks near the homestead trail, between Cutler and Camp Longview (*Small & Carter 1376, 1411*). In everglades near the unfinished railroad grade, between Cocoanut Grove and Cutler (*Small & Carter 1388*). Breckell's Hammock (*E. G. Brit-*

ton 87). In everglades near Camp Longview (*Small & Wilson* 1520). No. 14111 may be designated the type.

The leaf-cells of *P. Smallii* are somewhat variable with respect to the size of their trigones; even when very small, however, these structures can be easily demonstrated in leaves which are spread out flat. In some specimens the trigones and intermediate thickenings are more or less confluent, and this is especially likely to be the case along the inner side of the marginal cells, where the walls often present the appearance of being uniformly thickened (FIGURE 5).

As one would naturally expect, the species has several allies among the numerous species of *Plagiochila* found in the West Indies. Apparently the closest of these is *P. diffusa* Steph.,* a Cuban plant collected by Wright and distributed in his *Hepaticae Cubenses*. This species, however, is smaller and more delicate than *P. Smallii*, its leaves are shorter and relatively broader, the margins being more curved, the trigones of the leaf-cells are commonly indistinct, and the spine-like teeth at the mouth of the perianth are shorter. The insertion of the leaves in *P. diffusa* is very much the same as in *P. Smallii*; the line of insertion is sharply arched as in the majority of the *Plagiochilae*, and the leaves are consequently shortly but distinctly decurrent on both sides: Stephani's description would hardly indicate that this was the case.

Among other related species the following may be especially mentioned: *P. Wrightii* Steph.,† *P. tamariscina* Steph.‡ and *P. tenuis* Lindenb.§ The first of these is known from Cuba only; the second has been found in several of the West Indian islands; the third is still more widely distributed, its range extending into South America. In *P. Wrightii* the leaves are relatively broader than in *P. Smallii* and are rounded rather than truncate at the apex, a difference to be seen especially well in the perichaetial bracts. The inflorescence is almost always subtended by an innovation, and the bracts are crowded and in several pairs. *P.*

* Bull. Herb. Boissier II. 2: 870. 1902.

† L. c. 681.

‡ L. c. 685.

§ Sp. Hepat. Plagioch. 50. pl. 10. 1841.

tamariscina is smaller and more irregularly branched than the Florida species, but agrees with it in being without a subfloral innovation. The leaves of *P. tamariscina* are relatively broader and their marginal teeth, although smaller, are usually more numerous. The leaf-cells are variable; in typical cases the walls are uniformly thickened through the coalescence of trigones, but in some cases the trigones are distinct, and in still others the walls are thin throughout. In *P. tenuis* the ♀ inflorescence bears a subfloral innovation which is itself often floriferous; the leaves have fewer teeth than in *P. Smallii*, and the leaf-cells have larger and more frequently confluent trigones, which are especially conspicuous in the perianth and bracts.

2. LOPHOCOLEA MARTIANA Nees, in G. L. & N. Syn. Hep. 152. 1845.

Jungermannia connata Nees, in Martius, Fl. Bras. 1¹: 332. 1833; Ic. Plant. Crypt. 32. pl. 17, f. 2. 1828-1834. Not *Jungermannia connata* Swartz, Prodr. Fl. Ind. Occid. 143. 1788 (= *Lophocolea connata* Swartz & Nees, in G. L. & N. Syn. Hep. 153. 1845).

Blanton (*L. M. Underwood* 228). Everglades west of Miami (*Small & Nash* 480). In the hammocks near the homestead trail, between Cutler and Camp Longview (*Small & Carter* 1355 p. p., 1371 p. p., 1396). Widely distributed in the American tropics.

Lophocolea Martiana is fully described by Nees von Esenbeck in the *Synopsis Hepaticarum*, and also, more recently, by Spruce.* Both descriptions are drawn from robust and typical specimens and give an excellent idea of the plant as it usually appears. In some respects, however, the species is more variable than these descriptions would indicate. The leaves, for example, are approximately rather than truly opposite. At their antical bases they never quite correspond and are consequently never connate; at their postical bases they are either connate with the corresponding quadrifid underleaf or are connected with it by means of short and narrow wings; in this region the leaves are in some cases exactly opposite; but in other cases one of the two leaves will be much farther away from the underleaf than the

* Hep. Amaz. et And. 430. 1885.

other, making them appear distinctly alternate, and under these circumstances the wing may become exceedingly narrow or even obsolete. On a typical leaf the apex is broadly and more or less obliquely truncate and bears at each angle a sharp and slender tooth, the teeth usually diverging from each other. On a poorly developed leaf the teeth are often much less divergent or even subparallel and include between them a lunulate to acute sinus; on such a leaf the teeth are larger than on a typical leaf, and the postical tooth is appreciably larger than the antical.

The true *Lophocolea connata*, with which *L. Martiana* was originally confused, is also widely distributed in the American tropics and may perhaps be expected in southern Florida. It is distinguished by its bifid underleaves and by its less spinose bracts and bracteoles. Both species are autoicous.

3. *DIPLASIOLEJEUNEA UNIDENTATA* (Lehm. & Lindenb.) Schiffn.
Bot. Jahrb. **23**: 583. 1897.

Jungermannia unidentata Lehm. & Lindenb. in Lehmann, Pug.
Plant. **6**: 48. 1834.

Lejeunea unidentata Mont. in Ramon de la Sagra, Hist. Fis. Pol. y
Natur. Cuba **9**: 478. pl. 19. f. 2. 1845.

Lejeunea (Diplasio-Lejeunea) unidentata Steph. Hedwigia **29**: 90.
1890.

In hammocks near the homestead trail, near Camp Longview (*Small & Wilson*, mixed with 2058). Widely distributed in the West Indies.

The genus *Diplasiolejeunea* has not before been reported from the United States. It is distinguished from all the other genera of the *Lejeuneae* (except *Colurolejeunea*) by the possession of double the usual number of underleaves; in other words, this genus develops one underleaf for every leaf instead of for every pair of leaves. The underleaves are inserted on the axis at approximately the same level as the corresponding leaves. Aside from the duplication of the underleaves the genus is closely related to *Cololejeunea*, the lobules being built up on essentially the same plan.

In *D. unidentata* the leaves are destitute of hyaline margins and the lobe is orbicular or broadly ovate in outline. The leaf-cells are either plane or slightly convex. The lobule is inflated

except along the free margin, which is more or less appressed to the lobe. Two marginal teeth in the outer half of the lobule may usually be discerned. The inner tooth when normally developed points outward and consists of a row of two or three cells. The outer tooth, situated midway between the inner tooth and the end of the keel, is much larger and is apparently accountable for the specific name. This tooth points forward and is normally subulate in shape, averaging perhaps eight cells long and two cells wide in the lower half; it is, however, subject to a good deal of variation in size and shape and sometimes bears a short secondary tooth near the base. The underleaves are bifid to beyond the middle, and their straight divisions spread widely and are obtuse or subacute at the apex. *D. unidentata* is usually found on the bark of trees. According to Spruce* it is scarcely distinct from *D. pellucida* (Meissn.) Schiffn., which also has a wide distribution in tropical America. This latter species, however, is epiphyllous in habit and the lobes of its leaves are usually hyaline-margined.

4. *Cololejeunea diaphana* sp. nov.

Bright- or pale-green, scattered or very loosely cespitose, often mixed with other *Lejeuneae*: stems prostrate and closely adherent to the substratum, 0.035 mm. in diameter, sparingly and irregularly branched, the branches widely spreading: leaves distant, obliquely to widely spreading, the lobe ovate to lanceolate, 0.25 mm. long, 0.15 mm. wide, attached by a very short and almost transverse line of insertion, scarcely falcate, postical margin straight or somewhat curved, forming a continuous line with the keel, antical margin more strongly curved, apex acute to subobtuse, usually tipped with a single cell, margin varying from entire to slightly crenulate or denticulate from projecting cells; lobule (when well-developed) inflated, ovoid to obovoid, 0.1 mm. long, 0.07 mm. wide, keel slightly arched, free margin curved, involute toward the base, tipped at the apex with a rounded cell and bearing a short blunt tooth midway between the apex and the end of the keel; stylus reduced to a single papilla; leaf-cells plane or nearly so, averaging $13\ \mu$ at the margin, $18 \times 13\ \mu$ in the middle and $30 \times 16\ \mu$ at the base, thin-walled throughout or with very minute trigones: inflorescence autoicous: ♀ inflorescence sometimes on a short branch, sometimes on a leading branch, innovating on one side, the innovation sterile or again floriferous; bracts erect-spread-

* Hep. Amaz. et And. 302. 1884.

ing, more widely spreading after fertilization, complicate, the lobe narrowly oblong to lanceolate, 0.28 mm. long, 0.08 mm. wide, rounded to acute at the apex, margin as in the leaves, lobule oblong to cuneate, 0.12 mm. long, 0.035 mm. wide, apex mostly broad and obtuse, margin entire, or irregularly denticulate in apical region; perianth (immature) broadly obovate, 0.18 mm. long, 0.16 mm. wide, somewhat flattened, antical face plane, postical face with a broad and rounded keel, apex broad and truncate with a short beak, lateral keels sharp, denticulate from projecting cells, surface of perianth otherwise smooth or indistinctly roughened along the postical keel: ♂ inflorescence occupying a short branch or terminal on a longer branch; bracts distant to subimbricated, in one to six pairs, the lobe suberect, lanceolate, acute, 0.13 mm. long, 0.06 mm. wide, margin as in the leaves, lobule slightly concave, obovate, bluntly pointed, 0.08 mm. long, 0.05 mm. wide, entire or indistinctly denticulate; antheridia solitary: mature sporophyte not seen. (PLATE 5, FIGURES 9-14.)

In hammocks near the homestead trail, between Cutler and Camp Longview (*Small & Carter 1365 p. p.*, *1370 p. p.*). *No. 1365* may be designated the type.

C. diaphana is smaller and much more delicate than any of the other species of *Cololejeunea* known from the United States. The only one which it at all resembles is *C. Biddlecomiae* (Aust.) Evans, * in which also the leaves are more or less narrowed toward the apex and often acute. But in *C. Biddlecomiae* the whole outer surface of the lobe is roughened from projecting cells, there is a long stylus at the base of the lobule, and the roughened perianth is sharply five-keeled.

Among the tropical species, *Lejeunea* (*Colo-Lejeunea*) *ensifolia* Spruce, † an epiphyllous plant found in the Amazon region, is closely related to *C. diaphana*, but differs in its longer and more sharply pointed leaves, which are furthermore falcate and hamate. The variety *pigmaca* of this species, which, as Spruce implies, may be worthy of specific rank, has broader leaves than the type but is distinguished from *C. diaphana* by its five-keeled perianth, the keels projecting upward as short and rounded horns.

5. *Lejeunea floridana* sp. nov.

Bright- or pale-green, growing in depressed tufts, often mixed with other hepatics: stems prostrate, 0.14 mm. in diameter,

* Mem. Torrey Club 7: 168. 1902.

† Hep. Amaz. et And. 297. 1884.

irregularly branched, the branches obliquely to widely spreading, not microphyllous but usually with somewhat smaller leaves than the stem; rhizoids numerous, springing from the underleaves: leaves contiguous to loosely imbricated, the lobe widely spreading, ovate, 0.7 mm. long, 0.5 mm. wide, attached by a long and almost longitudinal line of insertion, antical margin straight or slightly curved near base, then more strongly curved to apex, postical margin less strongly curved, apex mostly broad and rounded, very rarely obtusely pointed, margin subentire or slightly and irregularly crenulate from projecting cells; lobule often obsolete, when well-developed inflated, triangular-ovoid, 0.12 mm. long, 0.09 mm. wide, keel slightly arched, roughened from projecting cells, free margin involute to apex, then passing by a long and shallow sinus to end of keel, apex tipped with a single, very blunt cell bearing a hyaline papilla at its proximal base; cells of lobe plane or somewhat convex, averaging $20\ \mu$ at the margin and $33 \times 25\ \mu$ in the middle and at the base, thin-walled throughout or with very minute trigones: underleaves distant, plane, orbicular, 0.2 mm. long, somewhat narrowed toward the base, bifid about one third with broad, triangular, rounded or obtuse lobes and a narrow sinus; margin very slightly crenulate from projecting cells; radicelliferous region bounded on each side by a large cell, sometimes developing a rudimentary disc: inflorescence autoicous: ♀ inflorescence borne on a leading branch or on a short branch, innovating on one side, the innovation sterile or again floriferous; bracts obliquely spreading, slightly complicate, the lobe oblong to ovate, 0.8 mm. long, 0.35 mm. wide, rounded to subacute at the apex, margin as in the leaves, lobule narrowly oblong, 0.25 mm. long, 0.04 mm. wide, scarcely projecting beyond end of keel, blunt, entire; bracteole slightly connate on both sides with bracts; ovate to obovate, 0.45 mm. long, 0.35 mm. wide, bifid about one tenth with broad, rounded or obtuse divisions and an obtuse sinus, margin as in the leaves; perianth slightly or not at all exerted beyond the bracts, obovoid, 0.7 mm. long, 0.4 mm. in diameter, narrowed toward the base, broad at the apex and with a distinct ciliolate beak, terete below, sharply five-keeled in upper third, the keels crenulate from projecting cells and extending upward as short rounded processes, surface otherwise smooth or nearly so: ♂ inflorescence occupying a short branch; bracts in two to ten pairs, imbricated and strongly inflated, 0.17 mm. long, 0.1 mm. wide, shortly bifid with obtuse divisions, the lobule slightly smaller than the lobe; antheridia solitary or in pairs; bracteoles at base of spike only, rotund and shortly bifid: mature sporophyte not seen. (PLATE 5, FIGURES 15-21.)

In hammocks near the homestead trail, between Cutler and

Camp Longview (*Small & Carter 1355 p. p.*, *1365 p. p.*). *No. 1355* may be designated the type. It is possible that the sterile specimens collected by Underwood at Ocala, Florida, in January, 1891, and distributed in *Hep. Amer. 178* (as *Lejeunea serpyllifolia*) should be referred to this species, but they are in too poorly developed a condition for positive determination.

One of the closest allies of *L. floridana* is *L. quinqueumbonata* Spruce,* which is known from the region of the Amazon. In both species the perianths are five-keeled in the upper part only and crenulate along the keels. Spruce refers his species to the subgenus *Otigonio-Lejeunea* but states that it approaches certain species of *Eu-Lejeunea* and that it would not be unnatural to include it among them. It agrees with typical species of *Otigoniolejeunea* in its general habit, in its rather large perichaetial bracts, and in the short keels of its perianth; it differs from them, however, because the keels do not project as long horns but merely as rounded processes, and also because the perianth is distinctly beaked. In the writer's opinion these differences are sufficient to remove the species from *Otigoniolejeunea* and to place it in *Lejeunea*. In *L. floridana* the lobules are even smaller than in *L. quinqueumbonata*, the lobes of the leaves are never pointed, and the margins of the leaves and bracts are either entire or much less strongly crenulate.

There are only two other species of *Lejeunea* known from Florida; one of these is the widely distributed *L. americana* (Lindb.) Evans; the other is noted below. *L. floridana* differs from *L. americana* in its laxer habit, in its smaller lobules and underleaves, and in the short and crenulate keels of its perianth.†

In the texture of its leaves *L. floridana* bears some resemblance to poorly developed specimens of *Cheilolejeunea phyllobola* (Nees & Mont.) Schiffn.,‡ with which it also agrees in its small lobules and underleaves and in its autoicous inflorescence. The *Cheilolejeunea* is a more compact species and its prostrate stems are more closely appressed to the substratum; it also exhibits a tendency to develop flagelliform branches with caducous leaves. Its deeply bifid underleaves, however, with sharply pointed divi-

* *Hep. Amaz. et And. 230.* 1884.

† *Mem. Torrey Club 7: 154. pl. 20, f. 14-26.* 1902.

‡ See Evans, *Mem. Torrey Club 7: 143.* 1902.

sions offer the best differential characters, and these are supported in fruiting specimens by the broader perianth with plane antical surface and smooth keels.

6. *LEJEUNEA GLAUDESCENS* Gottsche ; G. L. & N. Syn. Hep. 378. 1845.

Lejeunea (*Eu-Lejeunea*) *glaucescens* Steph. Hedwigia 29: 85. 1890.

Breckell's Hammock (*E. G. Britton* 32). Widely distributed in the American tropics.

The leaves and underleaves of *L. glaucescens* are so much like those of *L. floridana* that it would be difficult to distinguish the species in sterile condition. Even the leaf-cells in the two species are very similar, although the cell-walls in *L. floridana* are perhaps a little more delicate. In both species, moreover, the inflorescence is autoicous and the female flower is subtended by a single innovation. In the involucre and perianth, however, the differential characters become apparent. In *L. glaucescens* the bracts are shorter than the leaves and the lobules are usually distinctly pointed; the bracteole is sharply bifid about one third with acute or subacute divisions; the perianth is five-keeled to below the middle, and the keels, although minutely crenulate, do not project upward as horns; as the sporophyte matures the keels tend to become obliterated. The male spikes of *L. glaucescens* differ from those of *L. floridana* in being shorter and broader.

7. *Cheilolejeunea decidua* (Spruce).

Lejeunea (*Cheilo-Lejeunea*) *decidua* Spruce, Hep. Amaz. et And. 257. 1884.

In hammocks near the homestead trail, between Camp Longview and Cutler (*Small & Carter* 1370 p. p., 1408). Breckell's Hammock (*Howe* 81). Everglades near Camp Longview (*Small & Wilson* 1550). Long Key, mainland (*Small & Wilson* 1551). The original material of *C. decidua* was collected by Spruce in the region of the Amazon, and so far the species has been reported from no other localities. The Florida specimens are either sterile or male, but they agree so perfectly with those distributed in the *Hepaticae Spruceanae* that they can hardly represent any other species.

The specific name *decidua* refers to the fact that the leaves on some of the branches exhibit a strong tendency to break off. They are set free by a tearing across of the lobe near the lobule, sometimes leaving a complete water-sac behind, sometimes tearing away a portion of its wall; in any case the lobule is left intact. In general appearance the species bears much resemblance to two other *Lejeuneae* which have also been found in Florida; namely, *C. phyllobola* and *C. versifolia* (Gottsche) Schiffn.* Both of these species are pale in color and both develop flagelliform branches from which the leaves fall away, leaving nothing except the underleaves behind. *C. decidua* differs from *C. phyllobola* in the long and pointed apical teeth of its lobules, in its dioicous inflorescence, and in its usual lack of a subfloral innovation. It differs from *C. versifolia* in its much larger leaf-cells, none of which develop into ocelli, and in its cell-walls, which show distinct trigones instead of being uniformly thickened.

8. CERATOLEJEUNEA CUBENSIS (Mont.) Schiffn. in Engler & Prantl, Nat. Pflanzenfam. 1³: 125. 1893.
Lejeunea cubensis Mont. in Ramon de la Sagra, Hist. Fis. Pol. y Natur. Cuba 9: 481. pl. 18, f. 2. 1845.
Colura cubensis Trevis. Mem. R. Ist. Lomb. III. 4: 402. 1877.
Lejeunea (*Cerato-Lejeunea*) *cubensis* Spruce, Hep. Amaz. et And. 202. 1884.

In hammocks near the homestead trail, between Cutler and Camp Longview (*Small & Carter 1355 p. p., 1431; Small & Wilson 1527*), and in the vicinity of Silver Palm School (*Small 2349*). Widely distributed in tropical America.

Although *C. cubensis* has bifid underleaves and consequently belongs to the *Lejeuneae Schizostipae*, it cannot be confused with any of the other members of this group known from the United States. The most striking of the differential characters which it presents are the following: the deep olive-green or olive-brown color due to the pigmentation of the cell-walls, the more or less pointed lobes irregularly toothed in the apical region, the thick-walled leaf-cells with distinct middle lamella, and the four-horned perianth. Most of these characters are of course generic in value.

* See Evans, Mem. Torrey Club 7: 145. 1902.

The genus *Ceratolejeunea* has many other representatives in the West Indies, and it is possible that one or more of these will be found in Florida. *C. cubensis*, however, may be readily distinguished by the following combination of characters: the lobes are ocellate at the base, the lobules are inflated but small and never develop into large utriculi at the base of a branch, the underleaves are small and orbicular, bifid about one half with acute divisions and never cordate at the base, the inflorescence is autoicous, the bracts and bracteoles are usually coarsely serrate, and the horns of the perianth are short and obliquely spreading to suberect.

9. *LOPHOLEJEUNEA SAGRAEANA* (Mont.) Schiffn. in Engler & Prantl, Nat. Pflanzenfam. 1³: 129. 1893.

Phragmicoma Sagraeana Mont. in Ramon de la Sagra, Hist. Fis. Pol. y Natur. Cuba 9: 464. pl. 18, f. 1. 1845.

Lejeunea Sagraeana Mont.; G. L. & N. Syn. Hep. 314. 1845.

Phragmicoma cyclostipa Tayl. p. p. Lond. Jour. Bot. 5: 387. 1846.

Lejeunea cyclostipa Tayl. p. p.; G. L. & N. Syn. Hep. 749. 1847.

Symbiezidium cyclostipum Trevis. p. p. Mem. R. Ist. Lomb. III. 4: 493. 1877.

Symbiezidium Sagraeanum Trevis. l. c.

Lejeunea (Lopho-Lejeunea) Sagraeana Spruce, Hep. Amaz. et And. 129. 1884.

In hammocks near the homestead trail, between Cutler and Camp Longview (*Small & Carter 1370 p. p.*). Snapper Hammock (*E. G. Britton 479*). Breckell's Hammock (*E. G. Britton 84; Howe 88*). Miami (*Small & Wilson 1529*). Long Key, mainland (*Small & Wilson 1503 p. p., 1521, 1533 p. p.*). Elliott's Key (*Small 2348 p. p.*). A tropical species, widely distributed in America and in Africa. Stephani* reduces to *L. Sagraeana*, as a synonym, *Lejeunea subfusca* Nees, a species originally collected in Java but now known to have a much wider distribution. *L. subfusca* is based on *Jungermannia subfusca* Nees, Hep. Jav. 36. 1830. It was therefore published before *L. Sagraeana*, and, if the two species are really synonymous, Nees von Esbenbeck's specific name should not be superseded. According to Schiffner,† however, it

* Hedwigia 29: 16. 1890.

† Consp. Hep. Arch. Ind. 295. 1898.

may be possible to keep the two species distinct, and for this reason the well-known specific name of Montagne is here retained.

The genus *Lopholejeunea* is distinguished from the other genera of the *Lejeuneae Holostipae* by the absence of subfloral innovations and by the possession of a four-keeled perianth, the keels being bordered by toothed or lacinate wings. The antical surface of the perianth is smooth, two of the keels are lateral and the others are postical. Most of the species are dark brownish green in color, varying to a paler green on young branches. These peculiarities, although generic in value, will also serve to separate *L. Sagrazana* from the other *Lejeuneae* occurring in Florida.

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Explanation of plate 5FIGURES 1-8. *Plagiochila Smallii* Evans

- FIG. 1. Part of stem, antical view, $\times 9$.
 FIG. 2. Part of stem, postical view, $\times 9$.
 FIG. 3. Leaf spread out flat, $\times 16$.
 FIG. 4. Cells from middle of leaf, $\times 200$.
 FIG. 5. Cells from postical margin of leaf, $\times 200$.
 FIG. 6. Apex of a large tooth, $\times 200$.
 FIG. 7. Perichaetial bract, $\times 16$.
 FIG. 8. Perianth, $\times 24$.

The figures were all drawn from the type-specimens.

FIGURES 9-14. *Cololejeunea diaphana* Evans

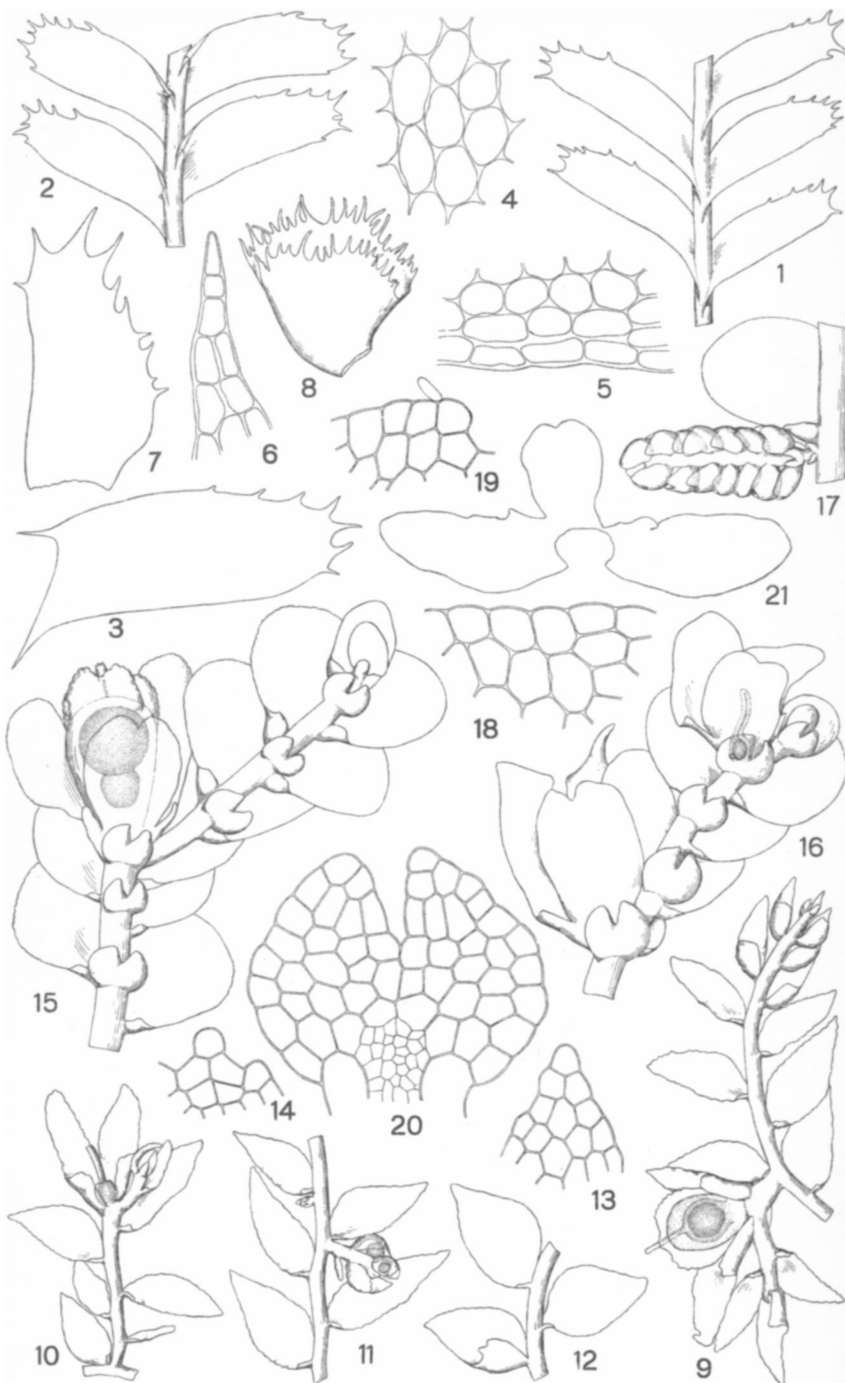
- FIG. 9. Part of plant showing perianth and large δ inflorescence, postical view, $\times 55$.
 FIG. 10. A branch with φ inflorescence, postical view, $\times 55$.
 FIG. 11. Part of plant showing small δ inflorescence, postical view, $\times 55$.
 FIG. 12. Part of stem showing one leaf with a well-developed lobule, postical view, $\times 55$.
 FIG. 13. Cells from apex of lobe, $\times 265$.
 FIG. 14. Apex of lobule, $\times 265$.

The figures were all drawn from the type-specimens.

FIGURES 15-21. *Lejeunea floridana* Evans

- FIG. 15. Part of stem with perianth, postical view, $\times 35$.
 FIG. 16. Branch with two φ inflorescences, postical view, $\times 35$.
 FIG. 17. δ inflorescence, $\times 35$.
 FIG. 18. Cells from antical margin of lobe, $\times 200$.
 FIG. 19. Apex of lobule, $\times 200$.
 FIG. 20. Underleaf, $\times 200$.
 FIG. 21. Perichaetial bracts and bracteole, $\times 35$.

Figure 21 was drawn from 1365 *p. p.*, the remaining figures from the type-specimens.



1-8. *PLAGIOCHILA SMALLII* Evans.

9-14. *COLOLEJEUNEA DIAPHANA* Evans.

15-21. *LEJEUNEA FLORIDANA* Evans.